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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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01/06/2006

Frank Reichenbach

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EXAMINER

PATEL, PUNAM

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/563,993	Applicant(s) REICHENBACH ET AL.	
	Examiner PUNAM PATEL	Art Unit 2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-36 is/are pending in the application.
- 4a) Of the above claim(s) 24, 33 and 34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-23, 29-32, 35, and 36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01/06/2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/06/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Claim 24 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 07/07/2008.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore,

(i) the embodiment of the sensor wherein the measurement areas are offset to one another in a lateral direction and the contact areas opposite one another in the lateral direction (see claim 27);

(ii) the embodiment of the sensor wherein the measurement areas are offset to one another in a lateral direction and at least one contact area is formed on four sides of the measurement chip (see claim 28);

(iii) Fig. 2 fails to show the location of the contact areas (see claim 29); and

(iv) the embodiment of the sensor wherein the measurement areas are offset to one another in a lateral direction and the wafer bond support is interrupted (as required by claim 30) must be shown or the features canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing

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sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 20 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form. Claim 19 already recites the limitation of “a contact area formed on the measurement chip and left exposed by the cap chip, for the contacting of the measurement chip.”

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

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pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 32 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

With respect to Claim 32, the disclosure fails to teach what an auxiliary structure is. No description of the structure or the function of the structure has been provided in the Specification or in the drawings (note that #25 simply points to a corner of the device). For the purposes of examination an auxiliary structure will be read as an attachment point (rather than a structure) on the corner of the measurement chip for the chip cap.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 30 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear as to what an "interrupted" point comprises. The language is vague and indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 19, 20, 21, 25-27, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Komatsu et al. (US 5,521,123).

With respect to Claims 19, 20, and 31, Komatsu et al. disclose an apparatus comprising:
a measurement chip (#1) with a first and second measurement area/structure (#s 11a-b)
formed thereon;
the measurement areas being offset in a y-direction;

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a cap chip (#2) fastened to the measurement chip in a connecting area (border and/or the perimeter around the measurement areas);

intermediate space (the cavity around and below the measurement areas) between the cap chip (#2) and the measurement chip (#1); and

at least one contact area not covered by the cap chip (#12). Also see Figs. 1-2

With respect to Claim 21 and 25-27, Komatsu et al. disclose two contact areas formed on opposing sides of the measurement chip, offset in a lateral direction, and left exposed by the cap chip. See Fig. 2

Claims 19, 20, 21, 25-27, 29, 31, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Aine (US 4,021,766).

With respect to Claims 19, 20, and 31, Aine discloses an apparatus comprising:

a measurement chip (#21) with a first and second measurement area/structure (col. 3: 60-63, #s 25 are the areas with PZT structure formed thereon) formed thereon;

the measurement areas being offset in a y-direction (Fig. 3);

a cap chip (#51, the metallic diaphragm) fastened to the measurement chip in a connecting area (#52, the epoxy border/perimeter around the measurement areas; also read as the auxiliary structure);

intermediate space (see Fig. 11) between the cap chip (#51) and the measurement chip (#21); and

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at least one contact area not covered by the cap chip (#35, 53 & col. 6: 65-68). See Figs. 3, 11, and 12

With respect to Claim 21 and 25-27, Aine discloses two contact areas formed on opposing sides of the measurement chip, offset in a lateral direction, and left exposed by the cap chip. See Figs. 3 & 12, #35, wherein the individual bond pads are read as the contact areas.

With respect to Claims 29 and 30, Aine discloses a wafer bond support point (#45) between the two measurement areas (#s 25) in which the cap chip (#51) is fastened to the measurement chip (#26, wherein #26 is part of the measurement chip #21). See Fig. 11

Claims 19, 20, 22, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Whitney (US 5,841,137).

With respect to Claims 19, 20, and 31, Whitney discloses an apparatus comprising:
a measurement chip (#2430 and/or the substrate comprising the measurement areas) with
a first and second measurement area/structure (#s 2401-2404) formed thereon;
the measurement areas being offset in a y-direction (#s 2401/2403, 2402/2404);
a cap chip (#2410) fastened to the measurement chip in a connecting area (col. 19, line 45 to col. 20, line 15 & the Au:Sn border and/or the perimeter of the measurement chip);
intermediate space (col. 18: 47-48, the cavity) between the cap chip (#2410) and the measurement chip (#2430); and

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at least one contact area not covered by the cap chip (Fig. 24c, the side where the pins connect to the chip). Also see Figs 24a-c & col. 17, line 63 to col. 19, line 45.

With respect to Claim 22, Whitney discloses the apparatus, wherein the first measurement area (#s 2401-2404) is provided for the detection of infrared radiation in a first wavelength range, the second measurement area (#s 2401-2404) is provided for the detection of infrared radiation in a second wavelength range, and the cap chip is transparent. See Abstract & col. 17, lines 66-67.

Claims 19, 20, 21, 25, 27, 31, and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Landsberger (US 2006/0063292).

With respect to Claims 19, 20, and 31, Landsberger discloses an apparatus comprising:
a measurement chip (the Si substrate) with a first and second measurement area/structure formed thereon (the cantilever structures);

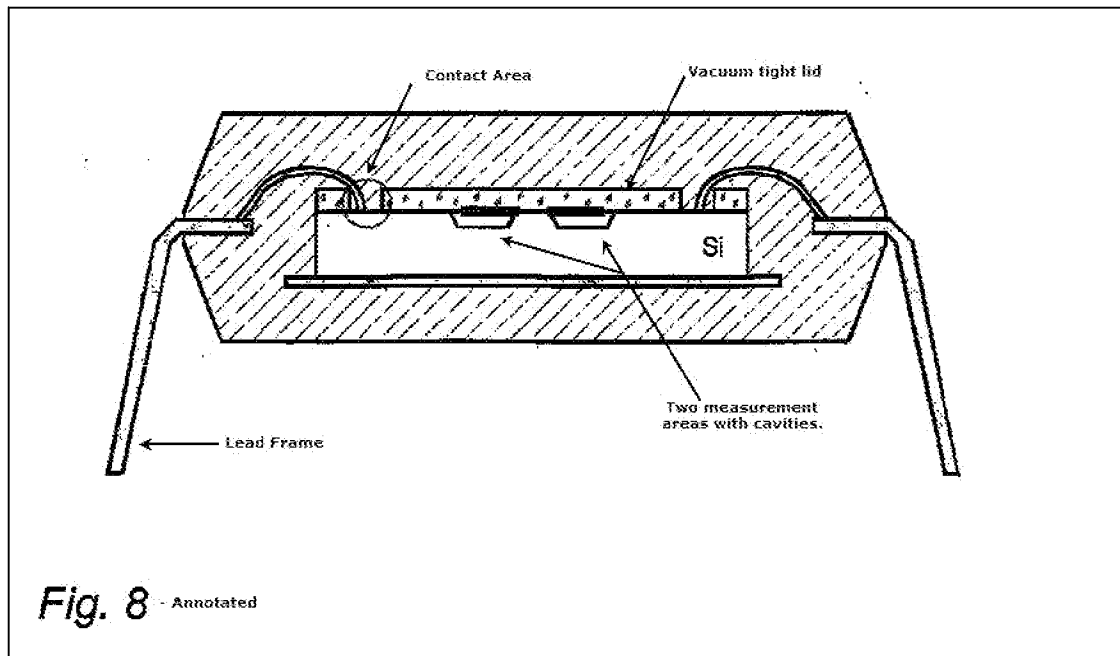
the measurement areas being offset in a lateral direction;

a cap chip fastened to the measurement chip in a connecting area;

intermediate space (the cavity) between the cap chip and the measurement chip; and

at least one contact area not covered by the cap chip. See Annotated Fig. 8 below;

Abstract; & ¶s 43, 51-54.



With respect to Claim 21, 25, and 27, Landsberger discloses two contact areas formed on opposing sides of the measurement chip and left exposed by the cap chip. See Annotated Fig. 8 below.

With respect to Claim 35, Landsberger discloses a lead frame, a housing, and wire bonds. See Annotated Fig. 8 below. (Compare to Applicant's Fig. 8).

Claims 19, 20, 21, 27, 28, 35, and 36 are rejected under 35 U.S.C. 102(e) as being anticipated by Derderian et al. (US 7,402,453).

With respect to Claims 19, and 20, Derderian et al. disclose an apparatus comprising:

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a measurement chip (#110) with a first and second measurement area/structure formed thereon (#112 and col. 7: 25-26, wherein each image sensor comprises a plurality of sensing pixels);

the measurement areas being offset in a lateral direction (the pixels are understood to be in an array form, wherein at least one pixel will be laterally offset from at least one other pixel);

a cap chip fastened to the measurement chip in a connecting area (Fig. 7, #150 is the cap chip and #230 is the connecting area);

intermediate space (#254/152, wherein the cavity may be filled or hollow) between the cap chip and the measurement chip; and

at least one contact area on the measurement chip and left exposed by the cap chip for the contacting of the measurement chip (Fig. 7, #116, 142, 140).

With respect to Claim 21, 27, and 28, Derderian et al. disclose contact areas formed on four sides of the measurement chip (Fig. 8B).

With respect to Claim 35, Derderian et al. disclose a lead frame (Fig. 7, #s 166 and 168 are connected via leads and are read as comprising the lead frame) and a housing (#s 180, 160) that surrounds a part of the lead frame and the measurement chip/cap, wire bonds (#140) running from the contact areas (#116) to the lead frame (# 166).

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With respect to Claim 36, Derderian et al. disclose the measurement chip fastened/connected/contacted on an evaluation chip (#114) that is connected to the lead frame (via #s116 and 140). See Fig. 7.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Landsberger in view of Lahiji et al. (G. R. Lahiji and K. D. Wise, "A batch-fabricated Silicon Thermopile Infrared Detector", IEEE Transactions on Electron Devices, Vol. ED-29, No. 1, 1982).

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With respect to Claim 23, Landsberger teaches the measurement structures maybe micro-thermal elements such as micro-bolometer created with CMOS technology (¶s 51-55), but fails to disclose the specific structure of the micro-bolometer. Lahiji et al. disclose a silicon thermopile infrared detector (a bolometer) comprising a membrane covering a cavity, a thermopile structure formed on the membrane and an absorber layer applied on the thermopile structure (Fig. 2) compatible with CMOS process and circuitry (pg. 22). It would have been obvious to utilize as the micro-bolometer of Landsberger a micro-bolometer as disclosed by Lahiji et al., since such an infrared detector is simple to manufacture, has a very broad spectral response, and does not require cooling (Lahiji et al., pg. 22).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references disclose similarly packaged microsensors: Krafthefer et al. (US 5,729,019), Ludwig et al. (WO 2004114403), and Seifert et al. (US 6,652,452).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PUNAM PATEL whose telephone number is (571)272-6794.

The examiner can normally be reached on Monday to Friday 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edward Lefkowitz/
Supervisory Patent Examiner, Art Unit 2855

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08/15/2008